

COLLABORATION BETWEEN SCHOOL AND COMMUNITY THROUGH SCHOOL AGROECOLOGY: A VEGETABLE SCHOOL GARDEN AS A BOUNDARY OBJECT

Arnau Amat¹ and Mariona Espinet²

¹ Universitat de Vic, Catalonia, Spain

² Universitat Autònoma de Barcelona, Catalonia, Spain

Abstract: The paper presents a case on how people from different backgrounds work together in a school agroecology project. This case study is part of a wider project within the European Comenius multilateral network CoDeS (Collaboration of schools and communities for a sustainable development), whose main objective is to foster school community collaboration for sustainability. In a little kindergarten and primary school from a small community, with only fifty students, we have been studying for four years the collaboration between the teachers, the students, the families and the neighbours around a school agroecology project. The key points of this collaboration have been the building of a *physical space* such as the vegetable garden, and the development of *shared activities*, where families, neighbors and students, learn together about gardening. The case study has been framed through the concept of *boundaries*, which the different actors have to cross for a successful collaboration. These *boundaries* are created because each community actor comes from different Discourse communities. Three parents and three teachers were interviewed, in order to identify what were the main visions about the project in the school. The results indicate that the vegetable school garden acts as a Boundary Object, an object that joins different actors of the community. We argue that successful collaboration between schools and communities for Education for Sustainable Development (ESD) depend on the skills of the different stakeholders to create boundary objects. The challenge for science education is to develop shared activities which are meaningful for different stakeholders and that are based on boundary objects.

Key words: Education for sustainable development, primary science education, case study, parents' involvement, vegetable school garden

INTRODUCTION

The paper presents a long term study in a kindergarten and primary school, in a little town, 60 km north from Barcelona. The school is called Valldeneu School and it has fifty students and five teachers. Since its foundation, the school wanted to involve all the community in everyday educational activities. In 2009 the school and the local administration which manages the environmental education program of this town decided to start collaborating in order to involve different actors of the community in the environmental education activities of the school. Monthly activities were designed and implemented and families, students and neighbors were invited to work together to

learn something about agroecology from a science education perspective, and to make some decisions about vegetable gardening.

These activities were named *shared activities* (Amat & Espinet, 2012; Amat, 2012). This case study is part of a wider project within the European Comenius multilateral network CoDeS whose aim is to foster school community collaboration for sustainability. Two of CoDeS' goals are to collect different European exemplar case studies which take into account the multi-stakeholders perspectives and to identify successful models of school community collaboration in ESD (CoDeS, 2012).

RESEARCH QUESTIONS AND THEORETICAL FRAMEWORK

The key idea of this project, and this research, is that the school can become a meeting point of different people who want to learn together about different topics, such as science or agroecology. From this approach we can expand the participation in the school towards different communities, for instance families and neighbors, besides teachers and students. All these people, who work together in the community (families, neighborhood, students and teachers), come from different Discourse communities and have their own Discourse (with Capital D) allowing the maintenance of their identity. This Discourse (D) is constituted by the ways people talk, read, write, think, value, act and interact with things or other people (Gee, 2004).

This case study has been framed through the concept of boundaries and boundary objects. Boundaries can be understood in two different ways. On the one hand, a boundary is understood as a sociocultural difference leading to discontinuity in action or interaction. But, on the other hand, boundary suggests continuity in the sense that within discontinuity two or more sites are relevant to another in a particular way (Akkerman & Bakker, 2011). These discontinuities can be created for the differences among Discourses. Parents and neighbors who were involved in this project had to cross, a part from physical boundaries, social and cultural boundaries. In spite of the discontinuities that all community actors had to confront, the collaboration worked for four years (Amat, 2012).

The main question of the study presented in this paper is: how are the people involved in school and community collaboration able to cross the boundaries which exist among different social worlds when participating in shared activities concerning agroecology and the vegetable garden?

There are different models that explain how people from different communities are able to work together, despite "talking" different Discourses. One useful model is the *boundary object*, considered as "those objects that both inhabit several intersecting worlds and satisfy the informational requirements of each of them... [They are] both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site use. (Star & Griesemer, 1989, p. 393)". In addition to the three characteristics of boundary objects specified by Star and Griesemer (1989) such as plasticity, structure and meaning, Wenger (1988) adds a fourth one, modularity, which focuses on the people's partial participation and task distribution.

METHODOLOGY

The study reported in this paper has used a qualitative approach to orient data collection and data analysis strategies. Qualitative approaches emphasize the importance of defining the researcher role and participation in the case. The first author of the paper has been participating actively for four years as an environmental educator, hired by the local administration, to work within the school and to help the teachers to design the shared activities. During this time the researcher has conducted participant observation and has also conducted formal and informal interviews with the parents, the teachers and the neighbors.

The main data of this study comes from six different interviews, which aimed at identifying teachers and parents' perspectives on the following: (a) the main motivation in the implementation of the school vegetable garden project; and (b) the goals and the role of each community actor when collaborating within the vegetable garden and the shared activities

The interviews were conducted in 2009 just when the project started and the first steps of the collaboration were developed. At this time there were only four teachers in the school, and it was decided to interview the principal of the school, and the teachers who were responsible for kindergarten and primary classrooms. The parents were selected based on their implication within the school and interest in the project. Finally three teachers and three parents were selected and interviewed within the school building. Table 1 shows the characteristics of the interviewed teachers and parents.

Table 1

Interviewed Teachers and Parents Characteristics

<i>Interviewed subject</i>	<i>School role</i>	<i>Background characteristics</i>
Teacher 1	Music teacher	Male teacher from a Latin American origin with wide experience in rural education
Teacher 2	Kindergarten teacher	Female teacher graduated in humanities and experienced in natural therapeutics
Teacher 3	School Head	Female teacher graduated in foreign language teaching
Parent 1	Coordinator of parents association	Mother of two students and civil servant in the regional administration
Parent 2	Member of the vegetable school garden commission	Father of one student and graphic designer
Parent 3	No school role	Mother of one student and housewife

The interviews were videotaped, transcribed and analyzed through a qualitative content analysis approach (Mayring, 2000). The main idea is that categories are in the center of analysis, and they have to fit the research questions as well as the data interpretation through a feed-back process. Data from each subject was organized in the following

three dimensions: (a) Vegetable garden as an agroecological space in the school; (b) Vegetable garden as an educational space in the school; and (c) Expectations about the other community stakeholders. Comparisons between the teachers and the parents were made so that differences and commonalities could be identified.

RESULTS

Teachers and parents hold similar as well as different views about the agroecological, educational and community value of introducing a vegetable school garden in the school through participating in shared activities.

First dimension: Vegetable garden as an agroecological space in the school

The first dimension deals with teachers and parents perceptions on the importance of building a vegetable garden in the school. The three parents and the three teachers share the same perception about what is the main aim of introducing a vegetable garden in the school. All of them mentioned that the most important aim is students' learning. They also share the idea that vegetable school gardens must be ecological and thus free of chemical products.

“Other people have a vegetable garden to live, to collect, to sell, to make business, but we have a vegetable garden to see the process, and to collect things is just secondary.... If we get tomatoes it is good, but nothing happens if we do not get them” (Teacher 2)

“I do not see the vegetable garden as something beneficial for me, to get profit from vegetables. I see the vegetable garden for children to manage, so that children learn gardening, they learn that if plants are taken care and watered they get fruits... independently that they eat them” (Parent 3)

There have also been identified different aims held by individual interviewees. For example, one parent said that it was necessary to close the cycle of organic matter into the school, but this claim wasn't shared by the other parents and teachers. Another example is supported by one teacher claiming the need that vegetable school gardens should be practical and not very demanding.

Second dimension: Vegetable garden as an educational space in the school

Second dimension is about teachers and parents educational approach when participating in vegetable school gardens. Teachers and parents show a wide range of different perceptions which have been classified in four sub-dimensions, inspired by the work of NAAEE (2012).

Values

The first sub-dimension refers to the importance of the values learnt through participating in the vegetable garden. Here, one parent and two teachers talked about the responsibility and respect. However, parents are more worried than teachers about healthy diet and food.

Methodology

The second sub-dimension is about the teaching and learning methodologies that are important in order to build knowledge when participating in the vegetable garden. Interview data indicate that parents are not aware about teaching methodologies since they do not mention anything about teaching. This is not the case of the teachers who held different perceptions on what is the best kind of methodology. One aspect all teachers agree upon is the rejection of following traditional teaching approaches when participating in vegetable school gardens.

Skills

The third sub-dimension is about the skills that are necessary when working into the vegetable garden. In this dimension, we can see big differences between parents and teachers. On the one hand, teachers think that they can teach students about the scientific skill of observation. On the other hand, parents think that it is a good moment to learn how to manage the food garden.

Curriculum

The fourth sub-dimension is referred to curricula areas that are important to study through the vegetable garden. Parents and teachers agree when they identify the curriculum areas of social and natural sciences as being the most important ones. The differences appear when they focus on specific aspects which include life plant cycle, organic matter cycle, and the origin of different products.

“I think you have a lot of material to teach natural sciences, right? I mean that if you need to study the plant you will go to the vegetable garden and you will observe the plant, right? And if you are in English you will call them tomatoes or whatever you want to call them... I mean you integrate everything to the extent that is possible”(Parent 1)

Third dimension: Vegetable garden as a community space in the school

Third dimension is about teachers and parents expectations on the different community actors involved in the vegetable school garden. We find that the most important participants, parents and teachers, have a well defined and agreed upon role in the collaboration.

Parents, for example, think that teachers have the power to decide what are the contents and the most important processes to teach in the school. Therefore, their role is to help teachers when they decide to start a new school project, such as a vegetable garden. But the three parents emphasize the idea that they participate in the collaboration because they want to learn something about food gardening.

On the other hand, teachers are viewed as either coordinators, because they have to coordinate the food garden project, and as facilitators, because they have to promote learning in the school.

The role of the other participants, such as environmental educator and neighbors, is less defined. For example, in some interviews neighbors are considered as experts who can help teachers in the food garden management, in other interviews they are viewed as a

people who have to manage the food garden, and finally, they are viewed as people who can bring plants and seeds into the school.

CONCLUSIONS

This particular vegetable school garden can be understood as a boundary object, because it is recognizable as an object by every community actor, it sustains a main common motivation and it also allows the development of a new role in the collaboration.

The vegetable garden is recognizable because all community members know what it is, know why it was built within the school, and can relate their own agricultural experience gained through life learning experience. Although all community actors share a similar common goal such as learning through participation within the school vegetable garden, they also have different particular goals. Finally, the vegetable garden is strongly structured at the level of individual use since all community actors appear to know their role within the collaboration.

We argue that successful collaboration between schools and communities for ESD depends on the ability of the different stakeholders to create boundary objects. Schools have difficulties to involve families and other community members within science education activities which are meaningful for the parents, the teachers and, most importantly, for the students. The case presented in this paper illustrates that school vegetable gardens can become a rich context, where different actors of the community work together in a science learning activity such as school agroecology.

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